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DISTRIBUTION AND MAGNITUDE OF EAGLE/LIVESTOCK CONFLICTS IN THE WESTERN UNITED STATES

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ABSTRACT: Problems with golden eagle (Aquila chrysaetos) and bald eagle (Haliaetus leucocephalus) depredation on livestock in western United States were investigated by surveying Animal Damage Control field personnel. One hundred forty-three individuals from 14 states identified areas where they had observed eagle damage to livestock in the past 10 years. Most field personnel believed golden eagles (both residents and migrants) were the most important species causing livestock depredations. The highest livestock losses to eagles were associated with open range lambing operations. Eagle numbers were reported to be increasing throughout the West, but livestock losses to eagles were staying at about the same level.

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INTRODUCTION

The true impact of eagles on the livestock industry has been difficult to evaluate. Various views are held by the general public, scientists, and the agricultural community. Data are few, but losses of lambs to golden eagles have been documented in Texas (Walther et al. 1979), Wyoming (Tigner and Larson 1977, 1981), Oregon (Foster and Crisler 1979), Montana (O'Gara 1978, 1981), and New Mexico (Littauer and White 1981) (Table 1). The primary conclusion that can be drawn from past damage assessment studies and mail surveys is that eagle predation on lambs and kids can be locally severe and can have substantial economic impact on individual producers. The estimated loss of $48,000 worth of lambs to eagles on 2 adjoining ranches in southwestern Montana in 1975 is perhaps the best example of severe livestock losses by individual producers (O'Gara 1981).

No recent surveys have been conducted to determine the current status of eagle depredation problems in the western U.S. This survey is an effort to better document the magnitude and geographic distribution of eagle predation on livestock as it existed in 1986. The information contained in this report comes from a group of people very close to the problem - the Animal Damage Control (ADC) field force.

METHODS

A survey form consisting of 17 questions concerning information about livestock depredations associated with eagles and the current status of eagle numbers was mailed to 452 ADC field personnel. This included individuals from 14 states that have ADC programs administered and supervised by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service and 2 states (South Dakota and Washington) that have programs supervised by the state Fish and Game departments. Only individuals who worked in areas where eagles and livestock operations overlapped received survey forms; all questions related to the field person's experience in his current area of responsibility. In tabulating and summarizing the results of the survey, we used only the information provided by those individuals who indicated they had eagle/livestock problems in their assigned areas.

Table 1. Summary of studies on lamb losses to eagles in the western U.S.

State	Reference	Source of data	% of predator losses attributed to eagles
Wyoming	Tigner and Larson 1977	Field Study	9
Montana	Henne 1977	Field Study	1
Montana	O'Gara 1978, 1981	Field Study	76
Oregon	Foster and Crisler 1979	Field Study	48
Texas	Walther et al. 1979	Mail Survey	24
New Mexico	Littauer and White 1961	Mail Survey	53
California	Nesse et al. 1976	Field Interviews	1

RESULTS

Three hundred ninety-one ADC field personnel responded to the survey for a response rate of 87%. One hundred forty-three individuals from 14 states (372 of the respondents) indicated that they had problems with eagle damage to livestock in their assigned areas within the past 10 years; 81% reported that they had personally confirmed eagle predation on livestock. Distribution of Eagle Damage

Respondents indicated that both golden and bald eagles were responsible for depredation problems. The eagle species primarily responsible for depredations in each state is shown in Fig. 1. Sixty-two percent of the respondents indicated golden eagles were the most important species; 4% indicated their problems were associated with bald eagles; and 34% thought both species were involved with depredations. Most of the reported eagle problems were associated with predation on young sheep and goats. However, several respondents reported cases where eagles were responsible for calf and poultry losses. Most field personnel (92%) believed that golden eagles were the most important species to deal with in terms of solving depredation problems.

All western states except Washington and Oklahoma, reported some eagle depredation to livestock (Fig. 2). Problems were most widespread in the sheep producing areas of Wyoming, Montana, Colorado, New Mexico, Utah, South Dakota, Texas, Oregon, and California. Localized problems were reported in Arizona, Idaho, Nebraska, Nevada, and North Dakota. In general, most field personnel thought eagle predation occurred repeatedly on the same ranches year after year, with the overall amount of predation on livestock remaining at the same level over the past 10 years. The highest percentage of ADC field personnel having to deal with eagle problems was in Wyoming where 19 of 23 (83%) reported eagle depredation problems in their assigned areas. The highest number of ranches (338) with eagle predation problems was in Texas (Table 2).

Timing of Livestock Losses

Eagle predation on livestock was reported during all months of the year, with the majority of losses occurring during the March through May period. In Texas, where lambing operations begin in December, the highest losses occur during the winter months when many migrant eagles are present on lambing ranges. Most ADC field personnel reported the highest losses to be associated with open range lambing operations; however, 18 respondents from 9 states reported losses of shed lambs to eagles. There was considerable variation between states on the amount of eagle predation associated with different types of lambing operations (Fig. 3). Forty-six percent of the respondents attributed sheep and goat losses to migrant eagles, while 19% thought resident birds were responsible for much of the depredation. Thirty-five of the respondents believed both migratory and resident birds were involved with depredation problems (Fig. 4).

Status of Eagle Populations in the West

Most of the respondents (92%) indicated that they had observed eagle population increases in the past 10 years (1976-86). They estimated population increases ranging from 10% in North Dakota to 62% in Utah and averaging 29% for the western states. A total of 10 field personnel from Colorado, Montana and Texas indicated that eagle numbers appeared to be reduced in their local areas.

Information from slate and federal raptor biologists and from several raptor study areas throughout the West

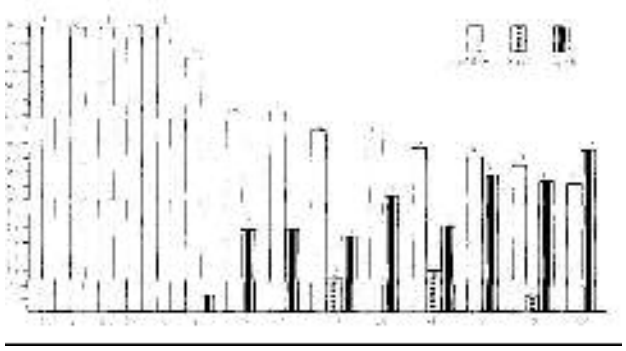

Fig. 1. A comparison between states on the importance of predation associated with different eagle species. The number of respondents is shown above each vertical bar.

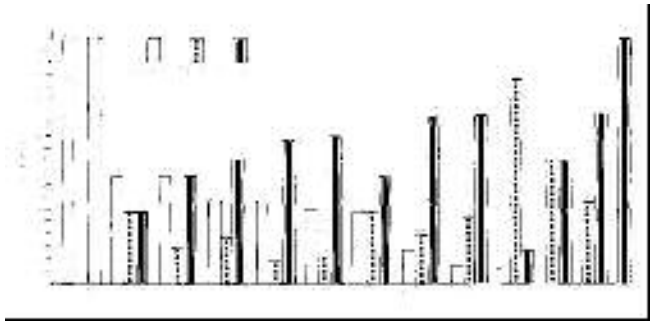

Fig. 2. Distribution of areas in the western U.S. where eagle predation on livestock has been reported.

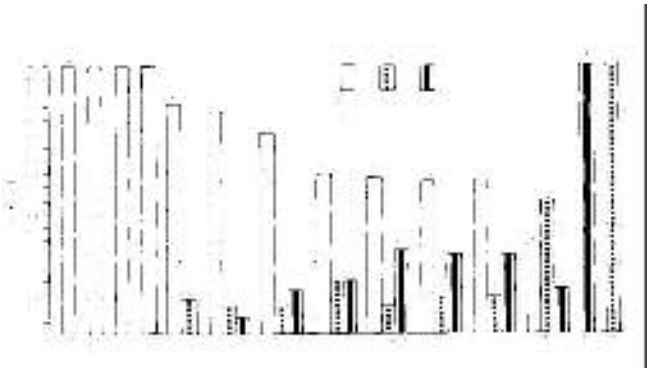

Fig. 3. The relationship of the type of lambing operation to the eagle predation problem in the western states. The number of respondents is shown above each vertical bar.

Table 2. Summary of eagle damage problems in 16 western states.

State	No. of respondents	No. of respondents with eagle problems(%)	No. of ranches with eagle damage
Wyoming	23	19 (83)	99
Colorado	14	8 (57)	79
New Mexico	27	15 (56)	132
Utah	23	15 (65)	126
Montana	17	10 (59)	105
South Dakota	15	6 (40)	33
Texas	105	38 (36)	338
Oregon	21	7 (33)	52
California	58	16 (28)	114
AZ,ID,NE, NV, NL	53	9 (17)	52
Washington	14	0	0
Oklahoma	21	0	0
Total	391	143 (37)	1,130

Table 3. Population status of golden and bald eagles in the western U.S. in 1986.

State	Estimated number of breeding pairs[a]	
	Golden	Bald
Arizona	500	21
California	500	59
Colorado	1,500	9
Idaho	800	26
Kansas	6	0
Montana	5,000	68
Nebraska	150	0
Nevada	1,200	1
North Dakota	150	0
New Mexico	150	0
Oklahoma	8	0
Oregon	1,000	132
South Dakota	200	0
Texas	150	23
Utah	1,000	1
Washington	1,000	227
Wyoming	4,200	35
Total	17,514	602

[a]Population estimates are based on telephone interviews with state and federal raptor biologists and published survey reports.

supports the opinion of ADC field personnel that eagle numbers have increased in recent years. Limited field studies in Wyoming and Montana suggest that all available habitat is saturated with breeding golden eagles (Phillips et al. 1987). The estimated westwide population of more than 17,000 breeding pairs (Ruos 1965) clearly indicates that, in terms of absolute abundance, golden eagles are not rare, threatened or endangered at this time. The number of breeding pairs of bald eagles also appears to be increasing steadily (U.S. Fish and Wildl. Serv. 1986). Recovery goals for this species are being met in several states. The current population status of both species is shown in Table 3.

Solutions to the Eagle/Livestock Conflict

Eighty-nine respondents offered ideas on control methods for protecting sheep and goats from eagle predation. We have divided these into 4 categories (Table 4).

Many of the nonlethal control methods that were suggested have been tried in situations where livestock predation was occurring. Considerable effort has been directed toward resolving eagle depredation complaints in Montana, Texas, and New Mexico in recent years. In these states, live-trapping and relocation of eagles present on lambing ranges has been the most commonly used technique to address the problem. For example, on the Helle-Rebish ranches near Dillon, Montana, 430 eagles were

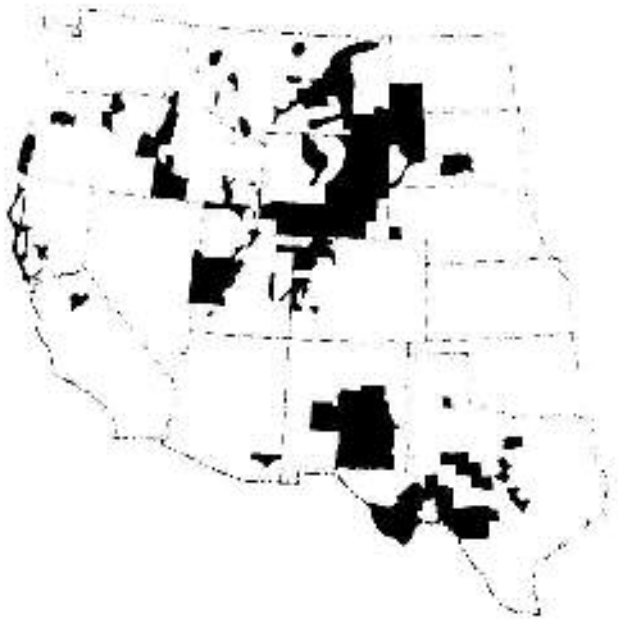

Fig. 4. The significance of resident and migrant eagles to the livestock predation problem in the western states. The number of respondents is shown above each vertical bar.

Table 4. Summary of suggestions offered by ADC field personnel for resolving eagle/livestock problems. Percent of each category shown in parentheses.

Proposed control method	Number of individuals suggesting method
Live-trap and removal of problem eagles	32 (36)
Lethal control	31 (35)
Scare tactics	7 (8)
Other*	19 (21)

*Includes husbandry practices such as close herding, timing of lambing dates, livestock carcass removal.

live-trapped and relocated during the period 1975 to 1983 (C. Niemeyer, pers. commun.). The results of these efforts have been generally inconclusive in terms of reducing lamb losses to eagles. Most field investigators who have dealt with eagle depredation problems feel that where eagles are preying on lambs in large open range pastures, scare tactics and the general live-trapping and relocation of eagles have been ineffective. The potential effect of using lethal control methods to reduce eagle/livestock conflicts has not been tested.

Clearly, there arc no definitive solutions to the eagle/livestock issue at the present time. O'Gara (1976) suggested that many eagles are currently being killed by ranchers in an effort to protect their livestock. A solution lo this problem would be in the best interest of the livestock industry and the western eagle population.

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